

Claims:

1. A motor endshield assembly comprising:

an endshield comprising an outer surface and an inner surface, said outer surface including a plurality of fins;

a control assembly in contact with said inner surface; and

a power assembly connected to said control assembly.

2. A motor endshield assembly in accordance with Claim 1 wherein said inner surface further comprises a substantially flat raised area for contacting said control assembly.

3. A motor endshield assembly in accordance with Claim 1 wherein said control assembly comprises a control board and a plurality of power transistors connected to said control board.

4. A motor endshield assembly in accordance with Claim 1 wherein said control assembly further comprises a thermal pad placed between said power transistors and said endshield, said thermal pad for transferring heat from said transistors to said endshield and for electrically isolating said transistors.

5. A motor endshield assembly in accordance with Claim 1 wherein said endshield is configured as a heatsink.

6. A motor endshield assembly in accordance with Claim 3 wherein each said power transistor comprises a plurality of leads, each said lead extending substantially parallel to said control board.

7. A motor endshield assembly in accordance with Claim 6 wherein said transistors comprise a top surface, a bottom surface, a front, a back, and a tab, said

bottom surface contacting said control board, said tab extending from said back along said top surface.

8. A motor endshield assembly in accordance with Claim 7 wherein said power transistor leads extend from said front of said power transistors at a position that is closer to said bottom surface than to said top surface.

9. A motor endshield in accordance with Claim 8 wherein said tabs comprise metal, said tabs contact said thermal pad which provides a thermal interface to said endshield.

10. A motor endshield assembly in accordance with Claim 2 wherein said recessed fins extend from said substantially flat raised portion.

11. A motor endshield assembly in accordance with Claim 1 further comprising a cap plug opening extending through said endshield and a cap plug covering said cap plug opening.

12. A motor endshield assembly in accordance with Claim 1 wherein said endshield further comprises aluminum.

13. A motor endshield assembly in accordance with Claim 3 wherein said power assembly comprises a power board and an insulator positioned between said power board and said control board.

14. A motor endshield assembly in accordance with Claim 13 further comprising:

a first spacer extending between said control board and said power assembly;

a plurality of clamp bars positioned between said power assembly and said power transistors, said first spacer and said clamp bars extending through said insulator; and

a second spacer extending between said control board and said endshield.

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15. A motor endshield assembly in accordance with Claim 1 wherein said endshield further comprises a plurality of bolt openings that extend through said endshield for receiving a through bolt.

5 16. A motor endshield for an electronically commutated motor, said endshield comprising:

an internal surface comprising a substantially flat raised area;

an external surface comprising a plurality of recessed fins and a raised cylindrical portion surrounding said opening; and

10 a shaft opening configured to receive a motor shaft.

17. A motor endshield in accordance with Claim 16 wherein said recessed fins extend from said substantially flat raised portion.

18. A motor endshield in accordance with Claim 16 further comprising a cap plug opening extending through said endshield.

15 19. A motor endshield in accordance with Claim 16 further comprising a plurality of recessed openings extending through said endshield, each said recessed opening for receiving a through bolt.

20. A motor endshield in accordance with Claim 16 wherein said endshield further comprises aluminum, said endshield configured as a heatsink.

20 21. A method of assembling a motor endshield assembly for an electronically commutated motor, the motor endshield assembly including a control assembly, a power assembly, and an endshield with an inner surface and an outer surface, said method comprising the steps of:

positioning the control assembly in contact with the inner surface of the endshield; and

connecting the power assembly to the control assembly.

22. A method in accordance with Claim 21 wherein the control assembly includes a thermal pad and a control board with power transistors connected thereto, said step of positioning further comprising the steps of:

positioning the power transistors in thermal contact with the thermal pad; and

placing the thermal pad in contact with the endshield.

23. A method in accordance with Claim 22 wherein the endshield inner surface includes a substantially flat raised portion, and the endshield outer surface includes a plurality of recessed fins, the recessed fins extending from the raised portion, said method of placing the thermal pad comprising the step of placing the thermal pad in contact with the substantially flat raised portion of the endshield such that the power transistors are in thermal contact with the recessed fins, wherein a thermal pathway is provided to dissipate heat from the transistors to the recessed fins and then to the ambient environment.

24. A method in accordance with Claim 23 wherein the power assembly includes an insulator, a plurality of clamp bars, a spacer, and a power board, and wherein said step of connecting the power assembly to the control assembly comprises the step of placing the power assembly in contact with the control board.

25. A method in accordance with Claim 24 wherein said method further includes the step of positioning the clamp bars to apply pressure to the transistors to enhance the thermal contact between the transistors and the recessed fins of the endshield.